

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Junya Maruyama et al.	Art Unit	: 2821
Serial No.	: 10/821,927	Examiner	: Unknown
Filed	: April 12, 2004	Confirmation No.:	2114
Title	: DISPLAY DEVICE AND MANUFACTURING METHOD THEREOF		

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Prior to examination, please amend the application as indicated on the following pages.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 19 of this paper.

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-48. (Canceled)

49. (Previously Presented) A mobile telephone comprising:

a display panel, the display panel comprising:

a first substrate;

an organic light emitting element over the first substrate; and

a second substrate which is translucent, the second substrate is bonded to the first substrate through a layer having adhesion,

wherein minute unevennesses are formed on a surface of the second substrate.

50. (Previously Presented) A mobile telephone according to claim 49, wherein height of the minute unevennesses is set to be 0.1 μm to 3 μm .

51. (Previously Presented) A mobile telephone according to claim 49, wherein the spacing between convex portions of the minute unevennesses is set to be 0.05 μm to 1 μm .

52. (Previously Presented) A mobile telephone according to claim 49, wherein the first and second substrates are glass substrates.

53. (Previously Presented) A mobile telephone according to claim 49, wherein a thickness of the layer having adhesion is 10 μm or less.

54. (Previously Presented) A digital camera comprising:

a display panel, the display panel comprising:

a first substrate;
an organic light emitting element over the first substrate; and
a second substrate which is translucent, the second substrate is bonded to the first substrate through a layer having adhesion,
wherein minute unevennesses are formed on a surface of the second substrate.

55. (Previously Presented) A digital camera according to claim 54, wherein height of the minute unevennesses is set to be 0.1 μm to 3 μm .

56. (Previously Presented) A digital camera according to claim 54, wherein the spacing between convex portions of the minute unevennesses is set to be 0.05 μm to 1 μm .

57. (Previously Presented) A digital camera according to claim 54, wherein the first and second substrates are glass substrates.

58. (Previously Presented) A digital camera according to claim 54, wherein a thickness of the layer having adhesion is 10 μm or less.

59. (Previously Presented) A mobile telephone comprising:
a display panel, the display panel comprising:
a first substrate;
an organic light emitting element over the first substrate; and
a second substrate which is translucent, the second substrate is bonded to the first substrate through a layer having adhesion,
wherein minute unevennesses are formed on a surface of the second substrate, and
wherein a surface of the second substrate opposing the first substrate comprises a first thickness at a first region and a second thickness at a second region, the first region is adhered

with the layer having adhesion, and the second region is located inside the first region and concaved relative to the first region.

60. (Previously Presented) A mobile telephone according to claim 59, wherein height of the minute unevennesses is set to be 0.1 μm to 3 μm .

61. (Previously Presented) A mobile telephone according to claim 59, wherein the spacing between convex portions of the minute unevennesses is set to be 0.05 μm to 1 μm .

62. (Previously Presented) A mobile telephone according to claim 59, wherein the first and second substrates are glass substrates.

63. (Previously Presented) A mobile telephone according to claim 59, wherein a thickness of the layer having adhesion is 10 μm or less.

64. (Previously Presented) A digital camera comprising:
a display panel, the display panel comprising:
a first substrate;
an organic light emitting element over the first substrate; and
a second substrate which is translucent, the second substrate is bonded to the first substrate through a layer having adhesion,
wherein minute unevennesses are formed on a surface of the second substrate, and
wherein a surface of the second substrate opposing the first substrate comprises a first thickness at a first region and a second thickness at a second region, the first region is adhered with the layer having adhesion, and the second region is located inside the first region and concaved relative to the first region.

65. (Previously Presented) A digital camera according to claim 64, wherein height of the

minute unevennesses is set to be 0.1 μm to 3 μm .

66. (Previously Presented) A digital camera according to claim 64, wherein the spacing between convex portions of the minute unevennesses is set to be 0.05 μm to 1 μm .

67. (Previously Presented) A digital camera according to claim 64, wherein the first and second substrates are glass substrates.

68. (Previously Presented) A digital camera according to claim 64, wherein a thickness of the layer having adhesion is 10 μm or less.

69. (Previously Presented) A mobile telephone comprising:
a display panel, the display panel comprising:
a first substrate;
an organic light emitting element over the first substrate; and
a second substrate which is translucent, the second substrate is bonded to the first substrate through a layer having adhesion,
wherein minute unevennesses are formed on a surface of the second substrate,
wherein a surface of the second substrate opposing the first substrate comprises a first region, a second region, and a third region, the first region is adhered with the layer having adhesion, the second region is located inside the first region and concaved relative to the first region, the third region is located inside the second region and concaved relative to the second region, and
wherein a dry agent is provided in the third region.

70. (Previously Presented) A mobile telephone according to claim 69, wherein height of the minute unevennesses is set to be 0.1 μm to 3 μm .

71. (Previously Presented) A mobile telephone according to claim 69, wherein the spacing between convex portions of the minute unevennesses is set to be 0.05 μm to 1 μm .

72. (Previously Presented) A mobile telephone according to claim 69, wherein the first and second substrates are glass substrates.

73. (Previously Presented) A mobile telephone according to claim 69, wherein a thickness of the layer having adhesion is 10 μm or less.

74. (Previously Presented) A digital camera comprising:
a display panel, the display panel comprising:
 a first substrate;
 an organic light emitting element over the first substrate; and
 a second substrate which is translucent, the second substrate is bonded to the first substrate through a layer having adhesion,
 wherein minute unevennesses are formed on a surface of the second substrate,
 wherein a surface of the second substrate opposing the first substrate comprises a first region, a second region, and a third region, the first region is adhered with the layer having adhesion, the second region is located inside the first region and concaved relative to the first region, the third region is located inside the second region and concaved relative to the second region, and
 wherein a dry agent is provided in the third region.

75. (Previously Presented) A digital camera according to claim 74, wherein height of the minute unevennesses is set to be 0.1 μm to 3 μm .

76. (Previously Presented) A digital camera according to claim 74, wherein the spacing between convex portions of the minute unevennesses is set to be 0.05 μm to 1 μm .

77. (Previously Presented) A digital camera according to claim 74, wherein the first and second substrates are glass substrates.

78. (Previously Presented) A digital camera according to claim 74, wherein a thickness of the layer having adhesion is 10 μm or less.

79. (New) A display device comprising:
a first substrate;
an organic light emitting element over the first substrate; and
a second substrate which is translucent, the second substrate is bonded to the first substrate through a layer having adhesion,
wherein minute unevennesses are formed on a surface of the second substrate.

80. (New) A display device according to claim 79, wherein height of the minute unevennesses are set to be 0.1 μm to 3 μm .

81. (New) A display device according to claim 79, wherein the spacing between convex portions of the minute unevennesses is set to be 0.05 to 1 μm .

82. (New) A display device according to claim 79, wherein the first and second substrates are glass substrates.

83. (New) A display device according to claim 79, wherein a thickness of the layer having adhesion is 10 μm or less.

84. (New) A display device comprising:
a first substrate;

an organic light emitting element over the first substrate; and
a second substrate which is translucent, the second substrate is bonded to the first substrate through a layer having adhesion,
wherein minute unevennesses are formed on a surface of the second substrate, and
wherein a surface of the second substrate opposing the first substrate comprises a first thickness at a first region and a second thickness at a second region, the first region is adhered with the layer having adhesion, and the second region is located inside the first region and concaved relative to the first region.

85. (New) A display device according to claim 84, wherein height of the minute unevennesses are set to be 0.1 μm to 3 μm .

86. (New) A display device according to claim 84, wherein the spacing between convex portions of the minute unevennesses is set to be 0.05 to 1 μm .

87. (New) A display device according to claim 84, wherein the first and second substrates are glass substrates.

88. (New) A display device according to claim 84, wherein a thickness of the layer having adhesion is 10 μm or less.

89. (New) A display device comprising:
a first substrate;
an organic light emitting element over the first substrate; and
a second substrate which is translucent, the second substrate is bonded to the first substrate through a layer having adhesion,
wherein minute unevennesses are formed on a surface of the second substrate,

wherein a surface of the second substrate opposing the first substrate comprises a first region, a second region, and a third region, the first region is adhered with the layer having adhesion, the second region is located inside the first region and concaved relative to the first region, the third region is located inside the second region and concaved relative to the second region, and

wherein a dry agent is provided in the third region.

90. (New) A display device according to claim 89, wherein height of the minute unevennesses are set to be 0.1 μm to 3 μm .

91. (New) A display device according to claim 89, wherein the spacing between convex portions of the minute unevennesses is set to be 0.05 to 1 μm .

92. (New) A display device according to claim 89, wherein the first and second substrates are glass substrates.

93. (New) A display device according to claim 89, wherein a thickness of the layer having adhesion is 10 μm or less.

94. (New) A display device comprising:

a first substrate;

a light emitting element over the first substrate; and

a second substrate which is translucent, the second substrate bonded to the first substrate through a layer having adhesion,

wherein a surface of the second substrate opposing the first substrate comprises a first thickness at a first region and a second thickness at a second region, the first region is adhered with the layer having adhesion, and the second region is located inside the first region and concaved relative to the first region.

95. (New) A display device according to claim 94, wherein the first substrate is a glass substrate.

96. (New) A display device according to claim 94, wherein the first substrate and the second substrate are a glass substrate.

97. (New) A display device according to claim 94, wherein a thickness of the layer having adhesion is 10 μm or less.

98. (New) A display device according to claim 94, wherein the display device is an active matrix display device.

99. (New) A display device according to claim 94, wherein the display device is a passive matrix display device.

100. (New) A display device comprising;
a first substrate;
a light emitting element over the first substrate; and
a second substrate which is translucent, the second substrate bonded to the first substrate through a layer having adhesion,

wherein a surface of the second substrate opposing the first substrate comprises a first region, a second region, and a third region, the first region is adhered with the layer having adhesion, the second region is located inside the first region and concaved relative to the first region, the third region is located inside the second region and concaved relative to the second region, and

wherein a dry agent is provided in the third region.

101. (New) A display device according to claim 100, wherein a permeable film is adhered to a portion of the second region to thereby contain the dry agent in the third region.

102. (New) A display device according to claim 100, wherein the permeable film is provided so that a bottom surface of the permeable film is not contact with the first substrate.

103. (New) A display device according to claim 100, wherein a difference in height between a bottom portion of the second region which is concaved relative to the first region and the first region is 160 μm to 350 μm .

104. (New) A display device according to claim 100, wherein a difference in height between a bottom portion of the second region which is concaved relative to the first region and the first region is 10 μm to 50 μm .

105. (New) A display device according to claim 100, wherein a difference in height between a bottom portion of the third region which is concaved relative to the second region and the second region is 50 μm to 150 μm .

106. (New) A display device according to claim 100, wherein the first substrate is a glass substrate.

107. (New) A display device according to claim 100, wherein the first substrate and the second substrate are a glass substrate.

108. (New) A display device according to claim 100, wherein a thickness of the layer having adhesion is 10 μm or less.

109. (New) A display device according to claim 100, wherein the display device is an active matrix display device.

110. (New) A display device according to claim 100, wherein the display device is a passive matrix display device.

111. (New) A display device comprising:

a first substrate;

a light emitting element over the first substrate:

a layer having adhesion for enclosing with a gap an area surrounding a region in which the organic light emitting element is provided on the first substrate; and

a second substrate which is translucent, the second substrate bonded to the first substrate through the layer having adhesion,

wherein a surface of the second substrate opposing the first substrate comprises a first region, a second region, and a third region, the first region is adhered with the layer having adhesion, the second region is surrounded by the first region and concaved relative to the first region, the third region is located between the layer having adhesion and an upper portion of the region in which the organic light emitting element is provided and concaved relative to the second region, and

wherein a dry agent is located in the third region.

112. (New) A display device according to claim 111, wherein a permeable film is provided between the layer having adhesion and the upper portion of the region in which the organic light emitting element is provided, and the permeable film is adhered to a part of the second region to thereby contain the agent in the third region.

113. (New) A display device according to claim 111, wherein the permeable film is provided so that a bottom surface of the permeable film is not contact with the first substrate.

114. (New) A display device according to claim 111, wherein a difference in height between a bottom portion of the second region which is concaved relative to the first region and the first region is 160 μm to 350 μm .

115. (New) A display device according to claim 111, wherein a difference in height between a bottom portion of the second region which is concaved relative to the first region and the first region is 10 μm to 50 μm .

116. (New) A display device according to claim 111, wherein a difference in height between a bottom portion of the third region which is concaved relative to the second region and the second region is 50 μm to 150 μm .

117. (New) A display device according to claim 111, wherein the first substrate is a glass substrate.

118. (New) A display device according to claim 111, wherein the first substrate and the second substrate are a glass substrate.

119. (New) A display device according to claim 111, wherein a thickness of the layer having adhesion is 10 μm or less.

120. (New) A display device according to claim 111, wherein the display device is an active matrix display device.

121. (New) A display device according to claim 111, wherein the display device is a passive matrix display device.

122. (New) An electronic appliance comprising:
a display panel, the display panel comprising:
a first substrate;
a light emitting element over the first substrate; and
a second substrate which is translucent, the second substrate bonded to the first substrate through a layer having adhesion,

wherein a surface of the second substrate opposing the first substrate comprises a first thickness at a first region and a second thickness at a second region, the first region is adhered with the layer having adhesion, and the second region is located inside the first region and concaved relative to the first region.

123. (New) An electronic appliance according to claim 122, wherein the first substrate is a glass substrate.

124. (New) An electronic appliance according to claim 122, wherein the first substrate and the second substrate are a glass substrate.

125. (New) An electronic appliance according to claim 122, wherein a thickness of the layer having adhesion is 10 μm or less.

126. (New) An electronic appliance according to claim 122, wherein the electronic appliance is one selected from the group consisting of a mobile telephone, a PDA, an electronic book, a video camera, a personal computer, an image reproduction apparatus, a digital camera, and a mobile computer.

127. (New) An electronic appliance comprising;
a display panel, the display panel comprising:
a first substrate;

a light emitting element over the first substrate; and
a second substrate which is translucent, the second substrate bonded to the first substrate through a layer having adhesion,

wherein a surface of the second substrate opposing the first substrate comprises a first region, a second region, and a third region, the first region is adhered with the layer having adhesion, the second region is located inside the first region and concaved relative to the first region, the third region is located inside the second region and concaved relative to the second region, and

wherein a dry agent is provided in the third region.

128. (New) An electronic appliance according to claim 127, wherein a permeable film is adhered to a portion of the second region to thereby contain the dry agent in the third region.

129. (New) An electronic appliance according to claim 127, wherein the permeable film is provided so that a bottom surface of the permeable film is not contact with the first substrate.

130. (New) An electronic appliance according to claim 127, wherein a difference in height between a bottom portion of the second region which is concaved relative to the first region and the first region is 160 μm to 350 μm .

131. (New) An electronic appliance according to claim 127, wherein a difference in height between a bottom portion of the second region which is concaved relative to the first region and the first region is 10 μm to 50 μm .

132. (New) An electronic appliance according to claim 127, wherein a difference in height between a bottom portion of the third region which is concaved relative to the second region and the second region is 50 μm to 150 μm .

133. (New) An electronic appliance according to claim 127, wherein the first substrate is a glass substrate.

134. (New) An electronic appliance according to claim 127, wherein the first substrate and the second substrate are a glass substrate.

135. (New) An electronic appliance according to claim 127, wherein a thickness of the layer having adhesion is 10 μm or less.

136. (New) An electronic appliance according to claim 127, wherein the electronic appliance is one selected from the group consisting of a mobile telephone, a PDA, an electronic book, a video camera, a personal computer, an image reproduction apparatus, a digital camera, and a mobile computer.

137. (New) An electronic appliance comprising:
a display panel, the display panel comprising:
a first substrate;
a light emitting element over the first substrate:
a layer having adhesion for enclosing with a gap an area surrounding a region in which the organic light emitting element is provided on the first substrate; and
a second substrate which is translucent, the second substrate bonded to the first substrate through the layer having adhesion,

wherein a surface of the second substrate opposing the first substrate comprises a first region, a second region, and a third region, the first region is adhered with the layer having adhesion, the second region is surrounded by the first region and concaved relative to the first region, the third region is located between the layer having adhesion and an upper portion of the region in which the organic light emitting element is provided and concaved relative to the second region, and

wherein a dry agent is located in the third region.

138. (New) An electronic appliance according to claim 137, wherein a permeable film is provided between the layer having adhesion and the upper portion of the region in which the organic light emitting element is provided, and the permeable film is adhered to a part of the second region to thereby contain the agent in the third region.

139. (New) An electronic appliance according to claim 137, wherein the permeable film is provided so that a bottom surface of the permeable film is not contact with the first substrate.

140. (New) An electronic appliance according to claim 137, wherein a difference in height between a bottom portion of the second region which is concaved relative to the first region and the first region is 160 μm to 350 μm .

141. (New) An electronic appliance according to claim 137, wherein a difference in height between a bottom portion of the second region which is concaved relative to the first region and the first region is 10 μm to 50 μm .

142. (New) An electronic appliance according to claim 137, wherein a difference in height between a bottom portion of the third region which is concaved relative to the second region and the second region is 50 μm to 150 μm .

143. (New) An electronic appliance according to claim 137, wherein the first substrate is a glass substrate.

144. (New) An electronic appliance according to claim 137, wherein the first substrate and the second substrate are a glass substrate.

145. (New) An electronic appliance according to claim 137, wherein a thickness of the layer having adhesion is 10 μm or less.

146. (New) An electronic appliance according to claim 137, wherein the electronic appliance is one selected from the group consisting of a mobile telephone, a PDA, an electronic book, a video camera, a personal computer, an image reproduction apparatus, a digital camera, and a mobile computer.

REMARKS


Claims 49-146 are currently pending with claims 49, 54, 59, 64, 69, 74, 79, 84, 89, 94, 100, 111, 122, 127 and 137 being independent. Claims 1-48 were previously canceled. New claims 79-146 have been added herein. No new matter has been introduced.

Applicant asks that all claims be examined in view of the amendment to the claims.

The extra claims fees in the amount of \$5150 (\$3350 for extra claims and \$1800 for extra independent claims) are being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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John F. Hayden
Reg. No. 37,640

Customer No. 26171
Fish & Richardson P.C.
1425 K Street, N.W. - 11th Floor
Washington, DC 20005-3500
Telephone: (202) 783-5070
Facsimile: (202) 783-2331
/adt
40338279.doc